CLAIMS

What is claimed is:

1. In a system having a bus and a system controller connected to the bus, said bus having a plurality of fixed ports, each of said ports capable of connecting a router card to the system controller, a method of sending a file from the system controller to a router card connected at a fixed port, said fixed port having a port address, the method comprising:

receiving a request packet from the router card, said request packet including a file type and the port address;

identifying the file from the file type and the port address; and

sending the file to the router card.

2. The method of claim 1, wherein such sending further comprises:

forming a data packet from the file, said data packet being of a fixed size and including a system frame header and a data packet protocol header;

transmitting the data packet to the router card;

re-transmitting the data packet to the router card if the system controller does not receive a proper acknowledgment packet from the router card; and

transmitting the next data packet to the router card if the system controller receives a proper acknowledgment packet from the router card.

3. The method of claim 2, further comprising:

forming a last data packet having a size less than said fixed size; and

transmitting the final packet to the router card.

4. The method of claim 3, further comprising:

re-transmitting a data packet to the router card if, after transmitting the data packet, the system controller receives a duplicate acknowledgment packet for the previous packet.

5. The method of claim 1, further comprising:

transmitting file parameters to the router card after identifying the file.

6. The method of claim 2, where the data packet protocol header consists essentially of an operation code, a block number, a file type and a checksum.

7. The method of claim 2, where the acknowledgment packet consists essentially of an system frame header, an acknowledgment code, and a block number.

8. The method of claim 2, where the system frame header specifies the addresses of the router card and the system controller and being less than or equal to 12 bytes in size.

9. The method of claim 5, where the system frame header specifies the addresses of the router card and the system controller and being less than or equal to 12 bytes in size.

10. The method of claim 7, where the system frame header specifies the addresses of the router card and the system controller and being less than or equal to 12 bytes in size.

11. The method of claim 1, where the request packet includes a system frame header and a request code, said system frame header including the address of the system controller and the port address of the router card and being less than or equal to 12 bytes in size.

12. The method of claim 2, where the request packet includes a system frame header and a request code, said system frame header including the address of the system controller and being less than or equal to 12 bytes in size.

13. The method of claim 1, further comprising:

powering the router card off initially; and

powering the router card on.

14. The method of claim 2, further comprising:

powering the router card off initially; and

powering the router card on.

15. The method of claim 12, further comprising:

powering the router card off initially; and

powering the router card on.

16. A program storage device readable by a machine, tangibly embodying a program of instructions readable by the machine to perform a method in a system having a bus and a system controller connected to the bus, said bus having a plurality of fixed ports, each of said ports capable of connecting a router card to the system controller, a method of sending a file from the system controller to a router card connected at a fixed port, said fixed port having a port address, the method comprising:

receiving a request packet from the router card, said request packet including a file type and the port address;

identifying the file from the file type and the port address; and

sending the file to the router card.

17. The method of claim 16, where such sending comprises:

forming a data packet from the file, said data packet being of a fixed size and including a system frame header and a data packet protocol header;

transmitting the data packet to the router card;

re-transmitting the data packet to the router card if the system controller does not receive a proper acknowledgment packet from the router card; and

transmitting the next data packet to the router card if the system controller receives a proper acknowledgment packet from the router card.

18. A system controller for connection to a bus having a plurality of ports, each of said ports having a port address and being capable of connecting a router card to the system controller, the system controller comprising:

a memory storing the location of files associated with each of the port addresses, each of the files being of a file type;

a request receiver for receiving a request for a file of a file type from a router card connected to the system controller at one of the ports having a port address;

an identifier for using said memory, said port address and said request to identify a file; and

a sender for sending the identified file to the router card.

19. The system controller of claim 18, where the sender comprises:

an encapsulator for encapsulating the file into a series of data packets, said data packets being of a fixed size and including a system header and a data packet protocol header where the data packet protocol header consists essentially of an operation code, a block number, a file type, and a checksum; and

a transmitter for transmitting the data packets one at a time.

20. The system controller of claim 18, further comprising:

an acknowledgment receiver for receiving acknowledgments from the router card for individual data packets and causing the transmitter to re-transmit a data packet if a proper acknowledgment for the data packet is not received and causing the transmitter to transmit the next data packet if a proper acknowledgment for a data packet is received.

21. The system controller of claim 18, further comprising:

a router card power controller for instructing the router card to power down and then power up.

22. The system controller of claim 18, further comprising:

a router card warm boot controller for instructing the router card to perform a warm boot.

23. The system controller of claim 21, where the router card power controller operates upon detecting the failure of another router card connected to the bus.

24. The system controller of claim 22, where the router card warm boot controller operates upon detecting the failure of another router card connected to the bus.

25. The system controller of claim 20, where the file type is selected from the group comprising operating system images and configurations.

26. The system controller of claim 18, where the files are located at a remote file server.

27. The system controller of claim 18, where the request consists essentially of a frame header, a request code, and a file type.

28. A router card for connection to a system, said system having a bus and a system controller connected to the bus, said bus having a plurality of fixed ports, each of said ports capable of connecting a router card to the system controller, the router card comprising:

a memory for storing an operating system image and a configuration, said memory essentially empty upon power-up; and

a request sender for sending a request for an operating system image and a configuration to the system controller upon power-up of the router card.

29. The router card of claim 28, further comprising:

a data packet receiver for receiving data packets; and

a data packet checker for checking whether a data packet is received in good order.

30. The router card of claim 29, further comprising:

a acknowledgment sender sending an acknowledgment to a data packet if the data packet received is in good order and re-sending a duplicate acknowledgment to the previous data packet if a data package is not received.

31. The router card of claim 28, further comprising:

a power control receiver for receiving an instruction from the system controller to first power down and then power up.

32. The router card of claim 28, further comprising:

a warm boot control receiver for receiving an instruction from the system controller to perform a warm boot.

33. The router card of claim 30, where the acknowledgment consists essentially of a system frame header, an acknowledgment code, and a block number.

34. The router card of claim 28, where the request consists essentially of a system frame header, a request code, and a file type.

35. The router card of claim 28, where the request is in several parts, and each part of the request consists essentially of a system frame header, a request code, and a file type.

36. The router card of claim 29, where the data packets are of a fixed size and include a system header and a data packet protocol header, and where the data packet protocol header consists essentially of an operation code, a block number, a file type, and a checksum.

37. In a system having a bus and a system controller connected to the bus, said bus having a plurality of fixed ports, each of said ports capable of connecting a router card to the system controller, a method of receiving a file from the system controller by a router

card connected at a fixed port, said fixed port having a port address, the method comprising:

sending a request packet to the system controller upon power up of the router card, said request packet including a file type and the port address;

receiving a data packet comprising a file from the system controller;

checking the data packet for correctness;

sending an acknowledgement for the data packet to the system controller if the data packet is correct.

38. The method of claim 37, further comprising:

receiving file parameters from the system controller after sending the request packet.

39. The method of claim 37, where the request packet consists essentially of a system frame header, a request code, and a file type.

40. The method of claim 37, where the data packet is of a fixed size and includes a system header and a data packet protocol header where the data packet protocol header consists essentially of an operation code, a block number, a file type, and a checksum.

41. A program storage device readable by a machine, tangibly embodying a program of instructions readable by the machine to perform a method in a system having a bus and a system controller connected to the bus, said bus having a plurality of fixed ports, each

of said ports capable of connecting a router card to the system controller, a method of receiving a file from the system controller by a router card connected at a fixed port, said fixed port having a port address, the method comprising:

sending a request packet to the system controller upon power up of the router card, said request packet including a file type and the port address;

receiving a data packet comprising a file from the system controller;

checking the data packet for correctness;

sending an acknowledgement for the data packet to the system controller if the data packet is correct.

42. The method of claim 41, where the request packet consists essentially of a system frame header, a request code, and a file type.